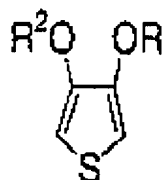


**WHAT IS CLAIMED IS:**

1. A process for preparing 3,4-dialkoxythiophene of the following chemical formula [1] or 3,4-alkylenedioxythiophene of the following chemical formula [2],

5 Chemical Formula [1]

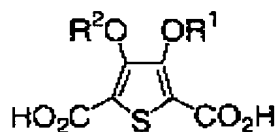


Chemical Formula [2]



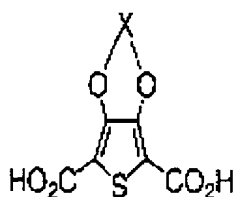
- which consists of decarboxylating, respectively, a parent 3,4-dialkoxy-2,5-  
10 thiophenedicarboxylic acid of the following chemical formula [3],

Chemical Formula [3]



- wherein R¹ and R² are each a straight-chain or branched alkyl with 1 to 9 carbon atoms,  
or a parent 3,4-alkylenedioxy-2,5-thiophenedicarboxylic acid of the following chemical  
15 formula [4],

Chemical Formula [4]



wherein X represents an optionally substituted  $-(CH_2)_n-$ , where n is an integer from 1 to 9, in a water-miscible polar solvent that has a boiling point lower than 225°C under an oxygen atmosphere by removing solvent by washing with water and isolation of the product by simple vacuum distillation.

2. A process according to claim 1, wherein the oxygen atmosphere is either air or pure oxygen gas.

3. A process according to claim 1, wherein the water-miscible polar solvent is a solvent or solvent mixture of two or more solvents selected from a group consisting of sulfoxides, alcohols and amides.

4. A process according to claims 1 to 3, wherein the solvent is a solvent or solvent mixture of two or more solvents selected from a group consisting of dimethylsulfoxide, N,N-dimethylformamide and ethylene glycol.

5. A process according to claim 4, wherein the copper catalyst is a catalyst selected from a group consisting of copper powder and copper salts, or a mixture of copper powder and copper salt.

6. A process according to claim 5, wherein the copper salt is selected from a group consisting of basic cuprous (cupric) carbonate, cuprous (cupric) sulfate, cuprous (cupric) oxide and cuprous (cupric) hydroxide.

7. A process according to claims 1 to 6, wherein the decarboxylation is performed at a temperature from 100 to 170°C.

8. A process according to claim 7, wherein the decarboxylation is performed at a temperature from 120 to 140°C.

9. A process as in any one of the preceding claims, the 3,4-dialkoxythiophene  
5 and 3,4-alkylenedioxythiophene are 3,4-dimethoxythiophene and 3,4-ethylenedioxythiophene respectively.